

REMARKS**I. Introduction**

Applicants appreciate the granting of an interview with the Examiner on September 19, 2006, during which time Applicants discussed the arguments and responses to arguments set forth in the July 5, 2006 Office Action. As a result of the interview, it is the Applicants view that the Examiner has a clear understanding of the issues concerning the prosecution of this patent application, specifically the rationale behind the Applicant's argument that the combination of the cited prior art references is improper.

For the reasons set forth below, Applicants respectfully submit that all pending claims are in condition for allowance.

II. The Rejection Of Claims 1, 3 and 5-11 Under 35 U.S.C. § 103

Claims 1, 3, 5, 6, 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Murakami et al. (US 2003/0039869) in view of Bailey et al. (USP No. 6,638,650) and claims 7, 10 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Murakami in view of Bailey and further in view of Stuhler (US 2004/0234826). Applicants respectfully traverse these rejections for at least the following reasons.

Claim 1 recites, in-part, a method for operating a polymer electrolyte fuel cell comprising a plurality of unit cells...said method comprising the steps of: determining an electric output of said single unit cell or a group of said unit cells after the stoppage of the supply of either said fuel gas or said oxidant gas and the introduction of another gas to at least one of said pair of electrodes; and comparing said electric output to a predetermined value.

Similarly, claim 11 recites, in-part, a polymer electrolyte fuel cell...wherein said fuel cell further comprises a control unit for determining said single unit cell or a group of said unit cells as defective when an electric output thereof is not greater than a predetermined value after the stoppage of the supply of either said fuel gas or said oxidant gas and the introduction of another gas to at least one of said pair of electrodes.

With regard to claims 1 and 11, Murakami fails to disclose the introduction of another or inert gas to one of the electrodes after the stoppage of the supply of either the fuel gas or oxidant gas. However, it was alleged that the teaching of Bailey (the introduction of an inert or other gas to the fuel cell via the fuel gas or the oxidant gas manifold) combined with Murakami renders claim 1 of the present invention obvious.

In contrast to the present invention, Bailey does not teach the addition of an inert gas **after the stoppage** of the supply of either the fuel gas or the oxidant gas. Rather, Bailey teaches the addition of either the fuel gas **and** the inert gas to the fuel cell, or the fuel gas, the oxidant gas **and** the inert gas to the fuel cell (see, col. 3, line 55 to col. 6, line 67 of Bailey). For example, Bailey states in the Summary of the Invention that “the method comprises: (a) supplying fuel to the fuel manifold(s) at a first pressure; (b) supplying oxidant to the oxidant manifold(s) at a second pressure; and (c) measuring the voltage across at least one of the fuel cell assemblies. Nowhere in Bailey is there any indication that the supply of either the fuel gas or the oxidant gas is stopped. There is no step recited in Bailey that the flow of *any* gas is stopped. In fact, the method of Bailey **requires** that the flow of either an oxidant or a fuel gas, or both, along with an inert gas is started. In contrast, Murakami discloses in the Abstract that “the abnormality in the fuel cell 1 is detected based on the speed of the decrease in the cell voltages *after stopping the*

fuel cell, i.e., after stopping the supply of the reacting gases to the fuel cell'. Thus, the two methods disclosed in Murakami and Bailey are mutually exclusive.

Furthermore, Murakami states in paragraph [0013] that when the power generation of the fuel is stopped, the supply of the reacting gases is stopped, but reacting gases may remain in the fuel cell. From the remaining gases, the voltage decrease is measured. Thus, if additional gases are added to the fuel cell, as in the method disclosed in Bailey, the speed of the decrease in the cell voltages cannot be measured because the additional gases would alter the decrease in voltage. Thus, the method of detecting a fuel leak of Bailey is not applicable to the method of Murakami, because Murakami requires **the stoppage** of fuel gas supplied to the fuel cell.

Moreover, one feature of the present invention is after the stoppage of the supply of either said fuel gas or said oxidant gas and the introduction of another gas to at least one of said pair of electrodes, the cell decrease is measured. The present invention discloses in Figs. 3 and 5 the importance of introducing the inert gas to the cell. Fig. 3 shows a normal cell, such as one disclosed in Murakami, in which the supply of reactant gases are stopped. Fig. 5 is a cell in which the inert gas is added after the stoppage of the reactant gases (fuel or oxidant). As is clearly shown, the time it takes for voltage decrease is far greater in Fig. 3 than in Fig. 5. This shows the advantage to using the present invention to find leaks over the cited prior art. Furthermore, neither of the cited prior art references allude to this advantage. Accordingly, even if the combination of Murakami and Bailey were proper, it still would not render claims 1 and 11 of the present invention obvious.

Furthermore, Stuhler does not cure the deficiencies of either Murakami or Bailey, nor does it allow for the combination of the two.

As is well known in patent law, if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). As the invention disclosed in Murakami requires the stoppage of fuel gas supplied to the fuel cell in order to operate, then Bailey, which teaches the addition of either the fuel gas **and** the inert gas to the fuel cell, or the fuel gas, the oxidant gas **and** the inert gas to the fuel cell in order to detect a fuel leak, would render the invention of Murakami inoperable for its intended purpose. Accordingly, as there is no suggestion or motivation to make the proposed combination of Murakami with Bailey or Stuhler, Applicants respectfully submit that the § 103 rejection of claims 1 and 11 over Murakami and Bailey be withdrawn.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claims 1 and 11 are patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Conclusion

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.


To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

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including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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